

### Connecticut Department of Energy and Environmental Protection











### Connecticut's Dam Safety Program

# Emergency Action Plans <a href="New Section 22a-409-3">New Section 22a-409-3</a> RCSA

May 1, 2014
Liz Napier EA 3
Public Outreach to Professional Engineers





Connecticut Department of Energy and Environmental Protection

### EAPs Class C & B Dams

Class C Dams 263 (92%+ have EAPs)

Class B Dams 277 (50%+ have EAPs)



### Requirements for Emergency Action Plans

RCSA 22a-409-3 (New)

- EAPs for Class C Dams due 12 months/ regulation adopted.
- EAPs for Class B Dams due 18 months/ regulation adopted.
- Update every 2 years, or more frequently to reflect significant changes.



### Owner Coordinate with Agencies to Plan





### Content of EAP Proposed Regulation

Criteria for inundation mapping

Dam Monitoring Procedure

Formal Warning Notification Procedure

Submission of the plan to DEEP



### **Inundation Mapping**

 Require the inundation map be prepared by a Professional Engineer. (Guidance being developed)

 Require use of topographical map sufficient in scale to clearly show the downstream inhabited areas and the inundation zone. (Contours/Elevations)

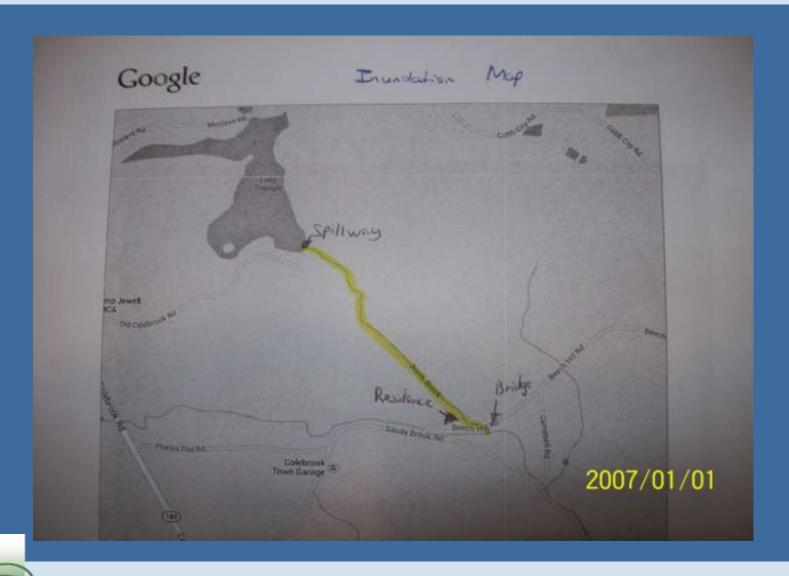


### Features on the Map Include:

- location of the dam
- inundation zone for dry weather and wet weather with arrows indicating the direction of the flood wave
- a north arrow and bar scale
- pertinent downstream cross sections, such as roads (identify the road names)

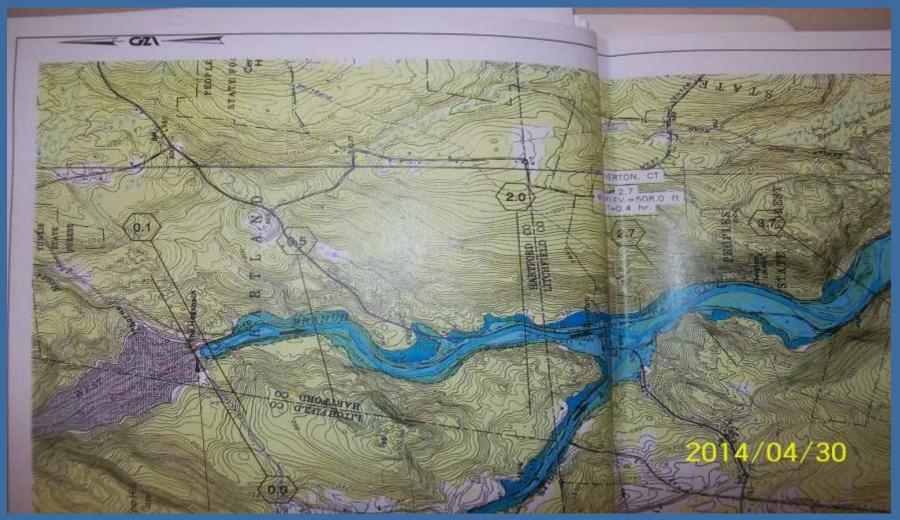


### Example of an Un-Acceptable Map





### **Example of Good Inundation Map**



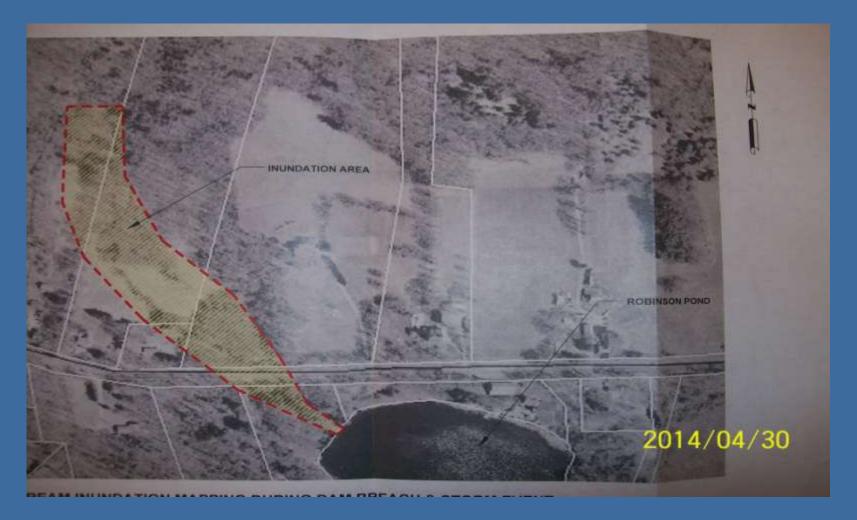


### **Example of Good Inundation Map**



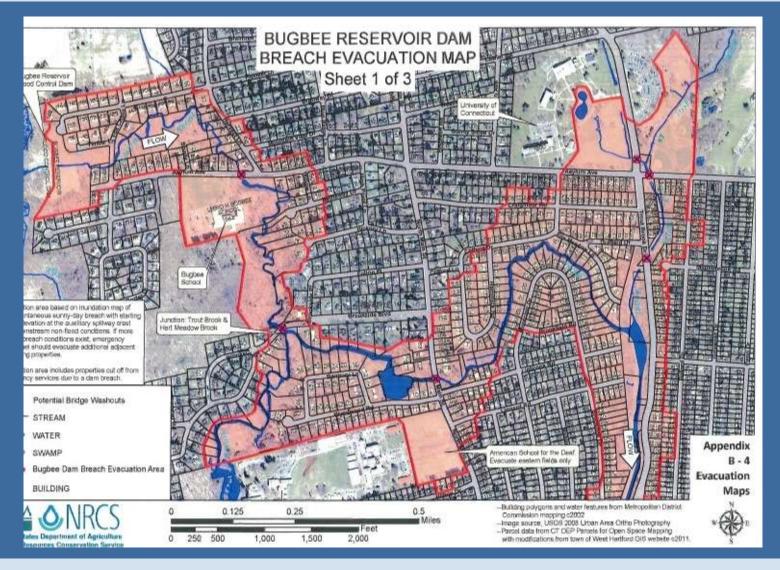


### **Example of Good Inundation Map**





### Inundation Map Bugbee Reservoir Dam





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### Information with Map

 An estimated timeline that shows arrival times of floodwaters at critical intersections and structures.

 A description of the method or computer model used to prepare the inundation map.



### Residents/Businesses/Roads at Risk

For Official Line Only - Not the Printing Descriptions 9/30/2012

### Appendix B - 5

### Residents/Businesses/Roads at Risk

A major flood caused by a sudden breach of the dam is estimated to affect many homes, businesses, roadways, and bridges. There are too many properties to list individually. The following lists can be used to help coordinate evacuations.

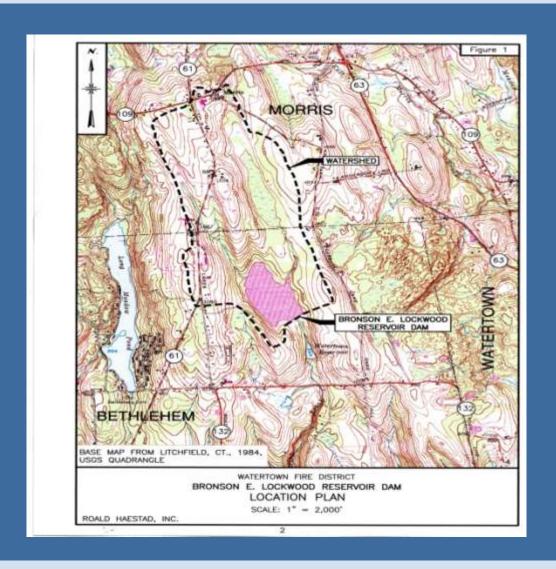
Street Numbers	Street Name	Property Type	Number of Properties
1995	Asylum Avenue	Residential	1
1904-1992 even	Anylum Avenue	Residential	18
8-16 all	Timber Lane	Residential	3
143 6 146	Fine Chase Lane	Residential	2
90-155 alt	Pioneer Drive	Besidential	26
4-11.ell	Shady tane	Residential	5
2-37 all	Plantest Lane	Residential	13
2943	Augium Avenue	Loyd it Bugher School	1
1901-1917 add	Agylum Avenue	Residential	4
788	Willow Lane	Residential	2
38-36 all	Hathaway Drive	Residential	8
42-52 even	Hickory Line	Residential	5
51	Hickory Lane	Residential	1
3	Brookside Place	rookside Place Residential L	
57.6.51	Brookside Boulevard	Residential	2
61 E 71	Brookside Drive	Residential	2
167 6 171	Cliffitrore Road	Residential	2
4-51 wii	Banbury Road	Residential	20
3-67 all	Wynwood Road	Residential	31
175-183 odd	North Main Street	Residential	5
142-192 even	North Main Street	Residential	14
67 &73 odd	Linnard Road	Residential	1
62-66 even	Linnard Road	Residential	1
59-69 add	Linbrook Road	Residential	5
56-66 even	Linbrook Roalf	Residential	5
1-25 add	Clifford Drive	Residential	9
10-50 irven	Clifford Drive	Residential	6
8-41 eli	Hammick Drive	Residential	19
44-68 even	Clifford Drive	Residential	7
\$3-73 ood	Clifford Drive	Residential	9
73-95 odd	Montchir Drive	Residential	7
85-58 eves	Montclair Orive	Residential	6
100-142 even	Montder Drive	Residential	19
301-129-pdd	Montplay Drive	Residential	9
4-20 even	Brookfield Road	Residential	5
1-45 all	Fox Meadow Lane	Residential	22
3-22 ull	Duffield Road	Residential	13
3-36 all	Craigmoor Road	Residential	2)
41-59 odd	Craigmour Road	Residential	7

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South Stratch Park River Waterdool, Note 67 (Begins Flans). Thatfield County, CT-600 CT80491.



### **Location Map**





### Dam Surveillance/Monitoring

- Procedure for monitoring the dam during periods of heavy rainfall and runoff, or when conditions develop that warrant close monitoring.
- Monitoring starts when National Weather Service announces a Flood Watch, <u>or</u> when conditions develop that warrant close monitoring.
- Owner notifies the local authority when monitoring has started.
- The plan identifies the person responsible for conducting surveillance/monitoring of the dam.

### **Monitoring Includes:**

• If feasible, walking the dam and its components to observe any changes in the dam.



Include a list identifying personnel that can be utilized by the
 owner for implementing emergency repairs.

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### Record of Monitoring Activity

		Appendix A - 3	
		Unusual or Emergency Event Log (To be completed during the emergency	
Dam na	me: South Branc	h Park River WatershediSite # 2), Bugbee Reserv	oir Dam, West Hartford, C
Mon a	nd how was the r	event detected?	
_	110 100 100 100 100 1	Tells Marting 1	
Weathe	r conditions:		
General	description of th	e emergency situation:	
-	A THE STREET STREET	T. 1	
-			-
Imergo	ncy level (1, 2, or	3) determination: made by:	
		***	
		Actions and Event Progression	
Date	Time	Action/event progression	Taken by
_			
eport p	repared by:	Dete	



### Inventory of Emergency Equipment

### Roald Harmed, Inc.

### **Emergency Supplies and Equipment**

The Fire District Superintendent, or his designee, will be responsible for implementing all emergency repairs.

Following is an inventory of available equipment and supplies stored at the Fire District Office, 24 DeForest Street, Watertown, Connecticut.

### Equipment:

- · One portable generator
- · Emergency portable lighting
- Trench pumps
- Small tools, gate valve operating tools, and usual water utility operating and repair equipment.

### Motor Vehicles:

- · One light utility pickup trucks.
- . Two 4x4 3/4-ton pickup trucks with plows.
- One 1/2-yard 4x4 front-end loader.

### Contractors Available for Emergency Assistance

### Construction, Sand/Gravel

O&G Industries, Inc. (Rock, paving materials) (860) 489-1836
 O&G (Woodbury) (203) 263-2708
 Scalia Brothers (sand) (860) 583-6466
 Public Works Supply (860) 667-0894

### Pumping Equipment:

Gould Pump, Seneca Falls, NY (315) 568-2811
 Torrington Supply Company, Waterbury, CT (203) 756-3641, ext. 260
 Stephen B, Church Company, Oxford (203) 888-2132



### Warning Notification Procedure

 Formal warning notification procedure required for <u>owner to alert local official</u> who is responsible for <u>the</u> <u>warning and</u>, <u>or evacuation</u> of residents in the inundation zone in the event of a potential dam failure.

Early Warning (potential failure)

Final Warning (evacuation)



### **Emergency Contact List**

	E	mergency Serv	ices Contacts		
	Agency / Organization	Principal contact	Address	Office talephone number	Alternate Influence number
	Gam Owner's Representative OCEP Engineering Services Supervision	Jennifer Perry	79 Elm St, Hertfield, CT	850-424-0802	anto exto case (nd) anto exto-case (nd)
	Ours Owner's Representative DEEP Western District Operations	Skip Keerns	230 Flymouth Road, Natwinton	800-485-0226	867-918-7347 (V) 860-803-1581 (F)
	Overs Safety, Official DREP Dame Safety Section	Arthur Christian	79 Elm St, Hariford, CT	860-629-3880 (W)	860-668-0385[16] 860-922-8962 (C
	DESP Flood Emergency Operations Canter (FEOC)	24 hr Emergency Locator Number	79 Em St 3" floor, Hartford, CT	MO-424-3637	860-424-3333 (((h))480(h))
	Director, DEEP Intend Water Resources Division	Denke Ruzcka	25 Elm St, Harriford, CT	8(0-424-385)	860-873-1277 (Fig. 860-885-4660 (C) 860-842-8029 (C)
	Bureau Chief, DEEP Weter Protection & Land Revor	Retney Winglield	79 Elm St, Hartford, CT	860-424-3791	860-633-31.17 [H] 860-818-5557 [C) 860-707-4378 [C)
STATE	DEEP Western Dutrit Ferwood Unit	Vincent Messine	57 Gen MSR Acad Bloomfield, CT	800-242-1158	Bioli 752-9020 (H)
	DEEP Western District Penwood Limit	Linda Youwn	57 Gart Mill Road Bioconfeld, CT	860-342-1158	860-653-9204 (H)
	DEEP claimer with DEHRES	Ed Wilds	79 Elm St, Hartford, CT	860-478-4110	860-690-3311-(C)
	State Emergency Operations Center (SEOC)	D. Conower	CT National Good Armory, 360 Broad St, Partford, CT	840 566 8180	
	ET Department of Energoncy Management and Humaland Sectoring (DEMMS) Devotor	William Rackett	25 Signworey St. 6 <sup>rd</sup> Soor, Hardford, CT	810-366-3180	300-483-8735 (M) 860-350-0947 (C) 860-706-0824 (C)
	DEH645 Operations Chief	D. Conover	25 Sigourney St, 6 <sup>th</sup> Boor, Hartford, CT	860-566-3713	860-859-2353 (H) 860-863-3904 (C) 860-706-0727 (C)
	OCHRES Region 3 Coordinator	Thomas Gavaghan	360 Broad St, Hartford, CT	860-519-6893	
	CT Department of Transportation 24 Hour Emergescy number	na.		3-800-695-0444	
	CT State Police Message Center	16		860-685-8190	

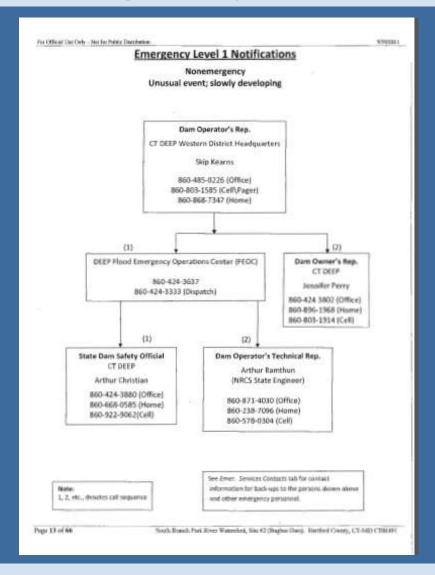
TOWN	West Hartford Local Emergency Operations Center (LEOC)	Gary Allyn, Director of Emergency Management	103 Raymond Rd, West Hartford, CT	B60-561-8300	860-8482462 (H) 860-883-7953 (C)
	West Fartford Town Manager \ Chief Executive Officer	Ron Van Winkle	West Hartford, CT	BBG-561-7440	
	West Hartford incident Commander	Gary Alyn, (Fire Chief)	West Hartford, CT	860-541-8300	
	West Hartford Police Department	Chief James Strillacci	West Hartlord, CT	860-523-5203	
	West Hartford Fire Department	Chief Gary Allyn		860-561-8300	
	West Hartford Local Emergency Operations Center (LEOC)	Gary Allyn, Director of Emergency Management	503 Raymond Rid, West Hartiford, CT	850-523-2020	
	West Hartford Emergency Radio WQBL-AM 1630 KHz				
	TV Channel 96			#60-561-1260	
OTHER	Natural Resources Conservation Service	Arthur Ramthon State Engineer	344 Merrowid Tolland, CT	860-871-4330	860-238-7095 (H) 860-578-0304(C)
	National Weather Service Teuroos, MA		Taunton, MA	508-823-2262	508-824-2714
	WTIC-AW/FM 1080 KHz/96.5 MHz			860-284-9800	
	W5RC-AM/FM 1360 KHz/502.9 MHz			860-769-6084	
	WF5B-1 (CBS)			860-728-3333	
	WVIT-30 (NBC)			860-521-3030	
	WTNH-8 (ASC)			203-748-8888	
1	WTIC-61 (FOX)			869-527-6161	860-727-0082

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South Breach Pork River Watershorf, Site #2 (Bugber Duns). Hartford County, CT-NID (270049)

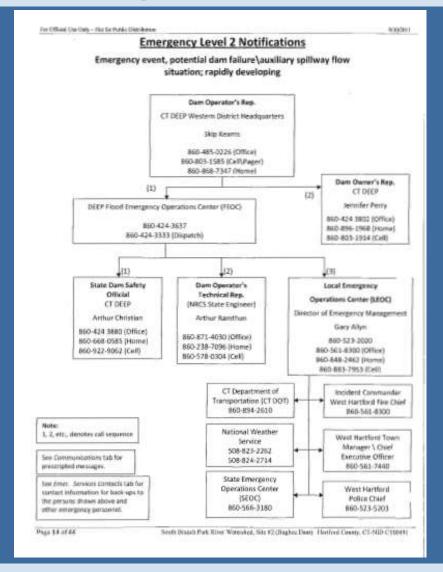


### Non-Emergency Notification



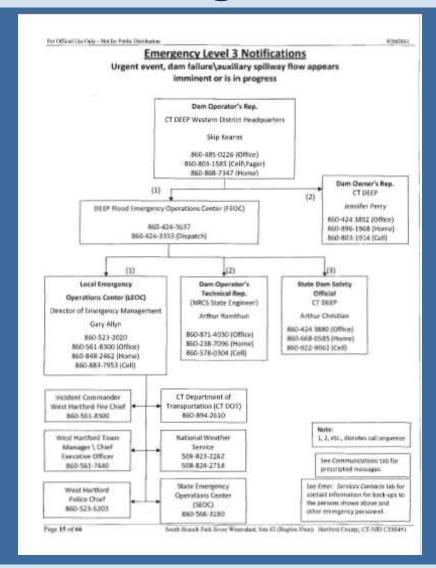


### Early Warning – Potential Failure





### Final Warning/Evacuation





### **Early Warning**

 Early Warning Notice initiated by the dam owner, or operator to the local authority responsible for providing emergency services.

 EAP includes a warning notification list with addresses for residences, businesses, and highways located in the inundation zone to be used to warn inhabitants downstream.



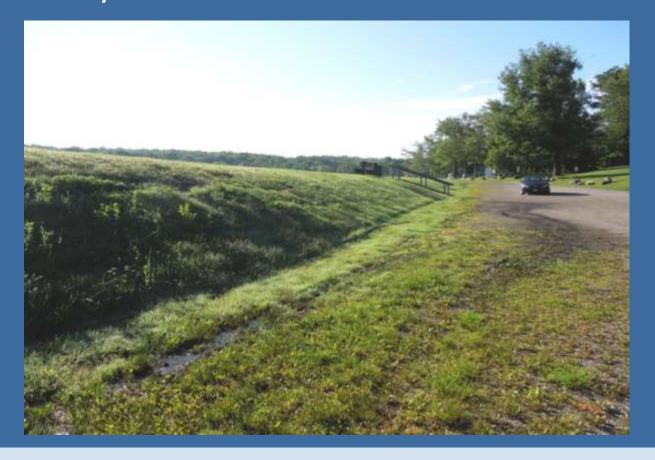
### **Early Warning Notice**

"This is [dam owner/operator name]. Conditions at [name of dam and location] indicate that the dam may be compromised and may fail, potentially causing extensive and rapid flooding downstream. Please warn residents in those areas within the limits of potential flooding, as described in this EAP, that an evacuation may be necessary."



### **Early Warning Criteria**

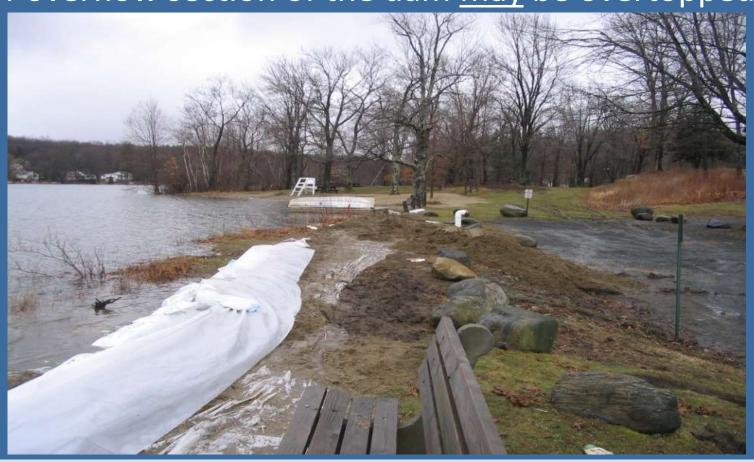
A marked increase in seepage through an embankment, particularly if evidence of a boil is observed.





### Overtopping

An increase in the rise of the impoundment such that the non-overflow section of the dam <u>may</u> be overtopped.





## Conditions are developing at the dam that could lead to a potential failure.





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### Final Warning

Final Warning Notice initiated by the dam owner, or operator to the local authority responsible for providing emergency services.





### Final Warning Notice

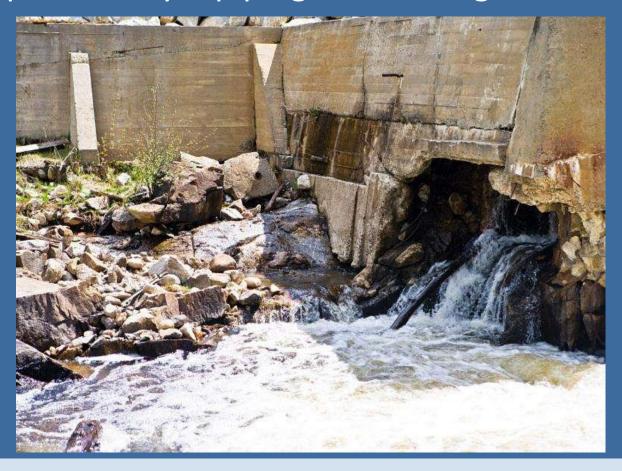
"This is [dam owner/operator name]. [name of dam and location] is failing, or in imminent danger of failing. Please warn residents that an immediate evacuation is necessary for those areas within the limits of potential flooding, as described in this EAP."





### Final Warning Criteria

A dramatic increase in seepage flow (or a pre-existing boil), particularly if piping is occurring.





## Movement of masonry or concrete spillways, training walls or other structures.





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### Overtopping

The rise of the impoundment is such that the non-overflow sections of the dam will overtop or is overtopping and the dam is failing or is in imminent danger of failing.





### **Erosion/Sloughing**

Substantial erosion or sloughing of dam embankments.







### **Evacuation**

Any other condition resulting in a probable failure of the

dam.





### Other EAP Requirements

Identify location of an Emergency Operation Center.





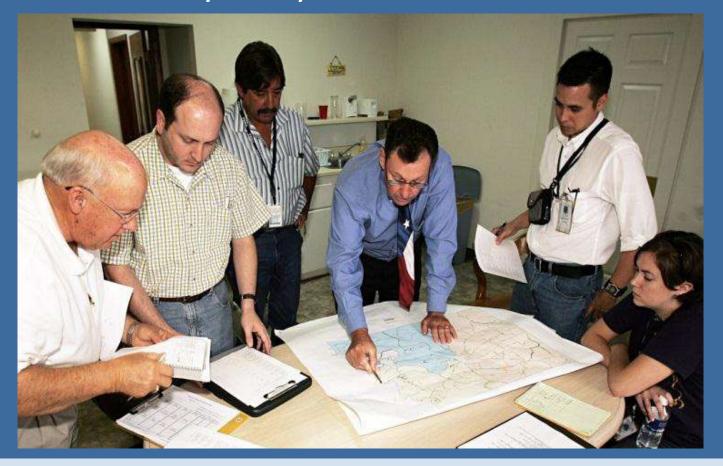
### Distribution List of Holders of Copies of this EAP

	Record of Holders of Control Copie:	s of this EAP
Copy Number	Organization	Person receiving copy
1	Connecticut Department of Energy and Environmental Protection Engineering Services Section 79 Elm St, Hartford, CT 06106	Dam Owner's Representative
2	Connecticut Department of Energy and Environmental Protection Dam Safety Section 79 Elm St, Hartford, CT 06106	State Dam Safety Official Arthur Christian
3	Connecticut Department of Energy and Environmental Protection Western District Headquarters 230 Plymouth Road, Harwinton, CT 06791	Skip Kearns
4	NRCS State Office 344 Merrow Road Tolland, CT 86084	NRCS State Engineer Arthur Ramthun
5	West Hartford Emergency Management 95 Raymond Road West Hartford, CT	Director of Emergency Management (Fire Chief) Gary Allyn
		ţs.



### Other Requirements continued...

Description of an exercise, or test to be conducted at a minimum of every two years.





### **Termination**

Termination of Emergency Conditions. Includes a procedure for determining when a termination of emergency conditions will be declared to allow downstream inhabitants to return to the area.



### Questions?

Liz Napier
CT DEEP Dam Safety
Elizabeth.napier@ct.gov
860-424-3717



# Dam Safety Website www.ct.gov/deep/dams

